(51) International Patent Classification[7]: G06F 13/00

(21) International Application Number: PCT/US01/48666

(22) International Filing Date:
19 December 2001 (19.12.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09/742,091   22 December 2000 (22.12.2000)   US

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(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,

(54) Title: METHOD AND SYSTEM OF COLLABORATIVE BROWSING
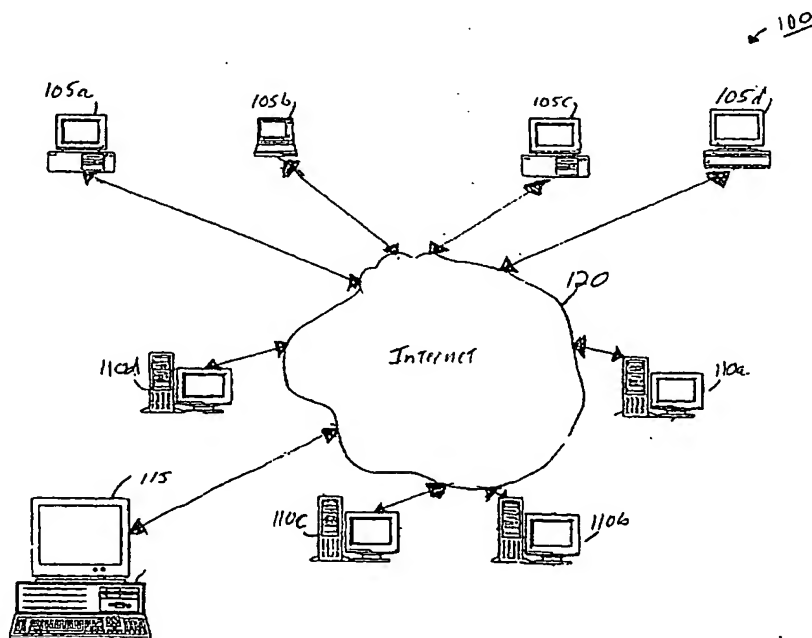
(57) Abstract: A dynamic collaborative-browsing system (100) enables client programs (105a-d) connected to a computer network (120) to join and leave groups or sessions, to collaboratively browse together as a session, to communicate with other client programs (105a-d) in the session. Each client program in the session may act as a session leader, or may just follow a session leader as it browses network sites of the computer network (120). The system (100) includes client programs, executing on client computers, server software and one or more main servers. The main server (115) groups into server-defined cells. One or more client programs interact with the server software to cause the server (110a-d) to create a session, to cause the client program to connect to a network site, to notify the server software of the network site's location or URL, and to notify other client programs in the session of the network site's location or URL so that other client programs in the session become connected to the same network site. The server software facilitates the formation of client programs into sessions and allows the client programs to communicate, to connect to and view a same network site, and to perform other collaborative activities. The server software also groups sessions currently connected to network sites in a same cell, and notifies each session and the client programs of the sessions of all of the other sessions and client programs in the same cell. The server software also facilitates communication between the sessions and client programs connected to network sites in the same cell.

METHOD AND SYSTEM OF COLLABORATIVE BROWSING

BACKGROUND OF THE INVENTION

Field of the Invention

This invention relates to browsing. More particularly, it relates to a system and

5   method of computer network browsing in which individual users can selectively identify,

join, interact with, follow, lead, and leave one or more browsing communities.

Discussion of the Related Art

In recent years the Internet has become an information medium that is widely

used for learning, communicating, advertising, entertaining, shopping, and interacting. The

10   dramatic growth of the Internet has significantly impacted how information and knowledge is

stored, searched, obtained, and communicated, and thus has changed how people share ideas.

Indeed, some believe that the Internet is a major component of a new information revolution

that will prove as significant as the industrial revolution.

One problem with efficiently utilizing the Internet, and closely related

15   networks such as Intranets, is the sheer amount of information that is available. In the case of

the Internet, that information is widely dispersed across many sites and Web pages. While

information searching can be performed using a search engine to search the Internet using a

particular query, another approach is to simply browse the Internet. When browsing, an

operator jumps from a hyperlink on one Web page to another Web page, and then to the next,

20   and so on. Such free form jumping from Web page to Web page can not only reveal sought

after information it has become a popular pastime. However, one limitation of this pastime is

that it is almost always performed in a solitary fashion.

leader, an ability to become a group leader, and an ability to communicate with other group members.

Furthermore, in some applications effectively working together involves more than individual human users. For example, in a classroom or in customer service it might be

5   beneficial for users to automatically move together from one network location to another. Therefore, a group should be thought of as being comprised of client programs, not individuals.

Therefore, a system that enables client programs to dynamically join and leave groups, to collaboratively browse as a group, to follow or act as a group leader, and to

10   communicate with other group members would be beneficial. Even more beneficial would be the ability to communicate with other group members by sending and receiving instant messages, by an ability to publicly and/or privately chat, and to send and receive files. Even more beneficial would be the ability to recognize when allied client programs are available for communication and collaborative browsing. Finally, since browsing requires a financial

15   commitment, and as producing a revenue stream can be important, it would be beneficial for the system to enable advertisements or other announcements, and to enable customer service representatives to help users find information and complete transactions.

SUMMARY OF THE INVENTION

The principles of the present invention provide for collaborative browsing.

20   Various embodiments of the principles of the present invention can enable client programs to perform one, several, or all of the tasks of: dynamically joining and leaving sessions, and collaboratively browse as a session, following a group leader, acting as a group leader, communicating with other client programs, sharing files, receiving advertisements, and/or

Beneficially, unless disabled by an individual client program, the server

software informs all client programs in all sessions about all of the other sessions on the same

cell. Even more beneficially, the server software enables communication among all client

programs located in a cell. Individual client programs or sessions in a cell can request

5   permission to join another session. If permission is granted, the server software joins the

client programs or sessions together. Furthermore, an individual client program in one session

can relocate to or communicate with other client programs in other sessions in a cell. Cells

tracked by the server software, all sessions in those cells, and all client programs in those

sessions comprise a SimulWorld. Beneficially, an individual main server can handle multiple

10   SimulWorlds. Alternatively or additionally, individual main servers or multiple main servers

can link their SimulWorlds together via server software.

Beneficially, the presence of allied client programs on a main server is

signaled to each client program. An allied client program is a pre-designated client program

for which a notification is sent to a particular client program whenever it is connected to the

15   network and is available for interaction. Typical allied client programs may include those

initiated by friends, co-workers, and family member. Allied client programs can interact and

can form new sessions. Furthermore, unless blocked by a client program, allied client

programs can communicate together even when they are not in the same cell.

The server software interacts with each client program such that each client

20   program can dynamically enter into and leave sessions, follow a session, lead a session,

communicate with other session client programs and allied client programs, and become

aware of other sessions in a cell. To this end, the server software receives and stores session

data (URL information), client program information, client program preferences, and session

DETAILED DESCRIPTION OF THE INVENTION

Figure 1 illustrates an exemplary system 100 having multiple client program computers, the computers 105a-105d, and multiple network servers, the network servers 110a-110d, and a main server 115. The client program computers 105 and all of the network

5   servers 110 are all bi-directionally connected to the Internet 120. The client program computers 105 and the network servers 110 are typically personal computers that are actually connected to the Internet 120 through a dedicated Internet port or through an Internet service provider (ISP). However, the client program computers 105 may also comprise personal digital assistants (PDAs), Web-equipped cellular telephones, Internet appliances, or other

10   intelligent devices having a processor, memory, and data input/output means.

The term "client program computer" designates a remote entity that connects to the system 100. In practice a client program, which may or may not be installed and executing on an individual user's computer, logs onto the main server via server software. Significantly, that client program may or may not be controlled by a human operator. For

15   example, the system 100 can run with an automated client program.

Typically, when connected to the Internet 120 a client program computer 105 runs under the control of a software browser, such as MICROSOFT® INTERNET EXPLORER®. While software browsers are complete applications, they are often designed to accept plug-ins: small code resources that run in the software browser. In Figure 1 it is

20   assumed that the client program computers 105a-105d are running under an Internet browser having a special plug-in that is in accord with the principles of the present invention. However, dedicated software programs and even special hardware can also be used.

therefore may contain many different Internet sites, each with many pages of information that can be navigated by the client program.

The server software has been programmed to recognize server-defined cells. A cell may be a Web site or a group of Web sites. For example, a company A might have five
5 Internet Web sites, each with hundreds of Web pages. That company, all of its Web sites, and each of the Web pages could all be defined to form one cell. Another example of a cell might be a university having numerous colleges, laboratories, professors, instructors, and associated organizations. That university's Web resources could all be defined as one cell. Finally, top-level domains can be recognized by their URLs. The server software can identify and track
10 those top-level domains and categorize each top-level domain as one cell. Significantly, the cells can be predefined or configured dynamically.

A cell may also be defined in terms of other resources available via the Internet 120. For example, a streaming audio file or a streaming video file that is accessible via the Internet 120 may be defined as a cell. Other Internet resources may similarly be
15 defined as a single cell.

Each time a client program computer 105, for example the client program computer 105a, establishes a new network (Web) location, the client program sends the main server 115 the URL of the new network location. If the network location's URL is identified as belonging to a particular cell, the server software sends the client program computer 105a
20 information (such as names) of the other client program in that cell. For example, if client program computer 105b is in a cell, and if client program computer 105a connects to that cell, then the server software informs the client program computer 105b that the client program computer 105a is in that cell. Similarly, the server software informs the client program

Joining a session enables that session's client programs to collaboratively browse. One of the session client programs acts as a guide that the others follow. A guide might be selected by the consent of the session client programs, or a guide might be selected by external factors, such as a client program being an instructor or other knowledge expert. If

5   collaborative browsing is enabled by a session client program, when the guide's client program computer 105 moves the session to a new network location (Web page or other Internet resource or location) each enabled session client program is informed of the new location so that they can follow the guide. To accomplish this, the guide client program sends the new network location to the server software. In turn, the server software causes the main

10   server 115 to send the guide's network location (URL) to each session client program computer 105. The client programs receives the new URL and cause their client program computer 105 to establish a connection at the new network location (URL). In this manner all session client program computers 105 are directed to the same location. If the new location is in a cell, the presence of the session is then transmitted to all of the other sessions and client

15   programs that are also in that cell. Beneficially, the client program enables any session client program computer to act as a guide.

It should be understood that not only client programs can join a session, but also sessions themselves can merge. For example, in Figure 2 the session comprised of the client program computers 105a and 105b could merge into a session comprised of the client

20   program computers 105c through 105d.

Client programs in a session can communicate with other client programs in that session. Also, client programs in a cell can communicate with other client programs in that cell. This is possible because the server software receives messages from a session client

aware of the client programs, the allied client programs on each client program's allied user list, and the cell locations of the allied client programs.

The client program controls how it implements the principles of the present invention. Various software embodiments may implement all of the features that are
5   discussed herein, some of those features, or other features. However, Figure 4 illustrates a typical client program's screen view 200 as displayed on a client program computer 105.

To assist the understanding of the description which follows, a particular client program whose screen is being referred to is hereinafter referred to as the current user. Other client programs will be referred to as other users.

10   The screen view 200 includes typical window taskbars and system information bars 210 and 215. Additionally, the screen view 200 includes typical Internet browser windows, such as an address bar 220 and site window 225. Other operating systems and browsers, or specifically dedicated software, may have other windows and bars. The screen view 200 also includes a link window 245 and a communication window 250.

15   The link window 245 includes a session pane 260 that displays the names of other session users. Those names are sent to each of the session users by the main server 115 so that they can be displayed. The link window 245 also includes a community pane 265 that displays the names of other users in the same cell as the current user. Additionally, the names the current user's allied users are also shown.

20   The communication window 250 includes a chat pane 275, a message pane 280, and an advertisement pane 285. The chat pane 275 provides a listing of communications that are available to the current user. Such communications might be from other session users, from other users in the current user's cell, or from allied users of the current user. The

following the client program computer 105b are also shown in the session pane 260. At this

time an icon 300 changes to a binocular to indicate that the current user is in a **Follow Mode.**

To stop following the client program computer 105b, and thus enable independent browsing,

the current user right-clicks the name of the user of the client program computer 105b and

5   then selects **Stop Following.** Alternatively the current user could also right-click the icon 300

and then choose **Stop Following.** The icon 300 then changes from a binocular to a surfer,

indicating that the current user in a solo browse mode.

The client program also enables the current user to invite other users to join a

session. For example, the current user might right click his mouse and then choose an **Invite**

10   feature on a selection window that pops up. The client program then places the current user's

name in a simple invite window. Then, the current user enters a personal message, selects a

number of allied users or other users in his session or on his current cell, right-clicks and

selects **Invite Friends.** A message is then sent by the main server 115 to the client program

computers 105 of the selected users inviting them to join the current user's session.

15   Additionally, the client program enables the current user to add allied users to

his allied user list by right clicking and then selecting **Add Friend.** The allied user list of the

current user is then displayed. The current user then updates his allied user list and sends that

information to the main server 115, which updates the current user's allied user list which is

stored therein. Alternatively, the current user can search for an allied user by searching for

20   their names on the current cell or from an email message. Once an allied user is found, the

current user then highlights the desired allied user, right clicks, and selects **Add Friend.**

Allied users can be removed from an allied user list by right clicking to display the allied user

list, finding the allied user to be removed, and then choosing **Remove Friend.**

this by providing the user the ability to right-click the icon 300, select the **Private Mode** on a selection screen that appears, and then choose **Private**. The icon 300 then changes to a lock and users cannot see the current user's cell or chat with the current user. The private mode can be removed by right-clicking the icon 300 and then choosing Public Surf. The icon 300 then

5   changes to a surfer and the current user is no longer in Private Mode.

Another useful feature the client program provides the current user is the ability to obtain a list of popular sites from the main server 115. This is enabled by clicking a Top Sites icon 317. The main server 115 then sends a list of the most popular cells to the current user's client program computer 105. Additionally, the listing of the other users in the

10   current cell can be enabled or removed by clicking a **Community** icon 320, and then clicking on either a plus sign that appears to enable the listing, or a negative sign that appears to remove the listing.

The principles of the present invention are applicable to many different hardware and software components. Systems could be configured to operate on various types

15   of hardware, including APPLE® personal computers, INTEL®-based personal computer, mainframes, and miniframes. Software components could be configured to operate as stand-alone programs or as plug-in to various Internet browser programs.

Additionally, while the foregoing has described only one main server 115, in some networks there may be more than one main server 115. For example, the United States

20   could have a main server 115a, England a main server 115b, and Germany a main server 115c. Then, when a particular user's client program computer 105 connects to the Internet 120, each main server 115 might be contacted. However, according to the user's location or

WHAT IS CLAIMED IS:

1   1.   A collaborative browsing system for a computer network comprising network servers

2   hosting a plurality of network sites, comprising:

3   a main server bi-directionally connected to the computer network, the main server

4   grouping locations of the network sites into server-defined cells; and

5   a plurality of client programs bi-directionally connected to the main server via the

6   network and each connected to at least one of the network sites,

7   wherein said main server enables a first one of the client programs connected to a

8   network site in one of the server-defined cells to identify a second one of the client programs

9   and to form a session with that second client program that collaboratively browses the

10   network sites, and

11   wherein the main server stores a location of the network site to which the session is

12   connected.

1   2.   A collaborative browsing system according to claim 1, wherein the main server

2   enables a client program connected to a network site in one of the server-defined cells to

3   identify at least two additional client programs among the plurality of client programs and to

4 · form the session with said additional client programs.

2   the session can act as a session leader.

1   9.   A collaborative browsing system according to claim 3, wherein all client programs in

2   the session can act as session leaders.

1   10.   A collaborative browsing system according to claim 1, wherein the computer network

2   is the Internet.

1   11.   A collaborative browsing system according to claim 10, wherein the network sites are

2   Web sites.

1   12.   A collaborative browsing system according to claim 11, wherein the locations are

2   each identified by a Universal Resource Locator code.

1   13.   A collaborative browsing system according to claim 12, wherein the one server-

2   defined cell is comprised of a plurality of locations each having a corresponding Universal

3   Resource Locator code.

1   16.   The method according to claim 14, further comprising assigning one of the first and

2   second client programs as a group leader.

1   17.   The method according to claim 14, further comprising:

2   assigning a plurality of network site locations to a cell;

3   tracking the first session and a plurality of other sessions in the cell; and

4   informing client programs in the first session of other client programs in the other

5   sessions in the cell.

1   18.   The method according to claim 14, further including causing the client programs in

2   the first session to follow the first session when the first session changes a network site to

3   which it is connected.

1   19.   A method of collaboratively browsing a network according to claim 14, wherein one

2   of the client programs communicates with another client program in the first session.

1   20.   A method of collaboratively browsing a network according to claim 14, wherein one

2   of the individual client programs in the first session communicates with a client program in

2   information from the first user and selectively sends that message information to other users

3   in the other sessions in the cell.

1   24.   A main server according to claim 21, wherein the main server sends information to a

2   first user regarding an allied user.

1   25.   A main server according to claim 24, wherein the main server receives message

2   information from the first user and selectively sends that message information to the allied

3   user.

1   26.   A main server according to claim 21, wherein the information sent to a first user

2   regarding properties of the session includes information regarding other users in the session.

1   27.   A main server according to claim 21, wherein the information sent to a first user

2   regarding properties of the session includes information regarding the current location of the

3   session.

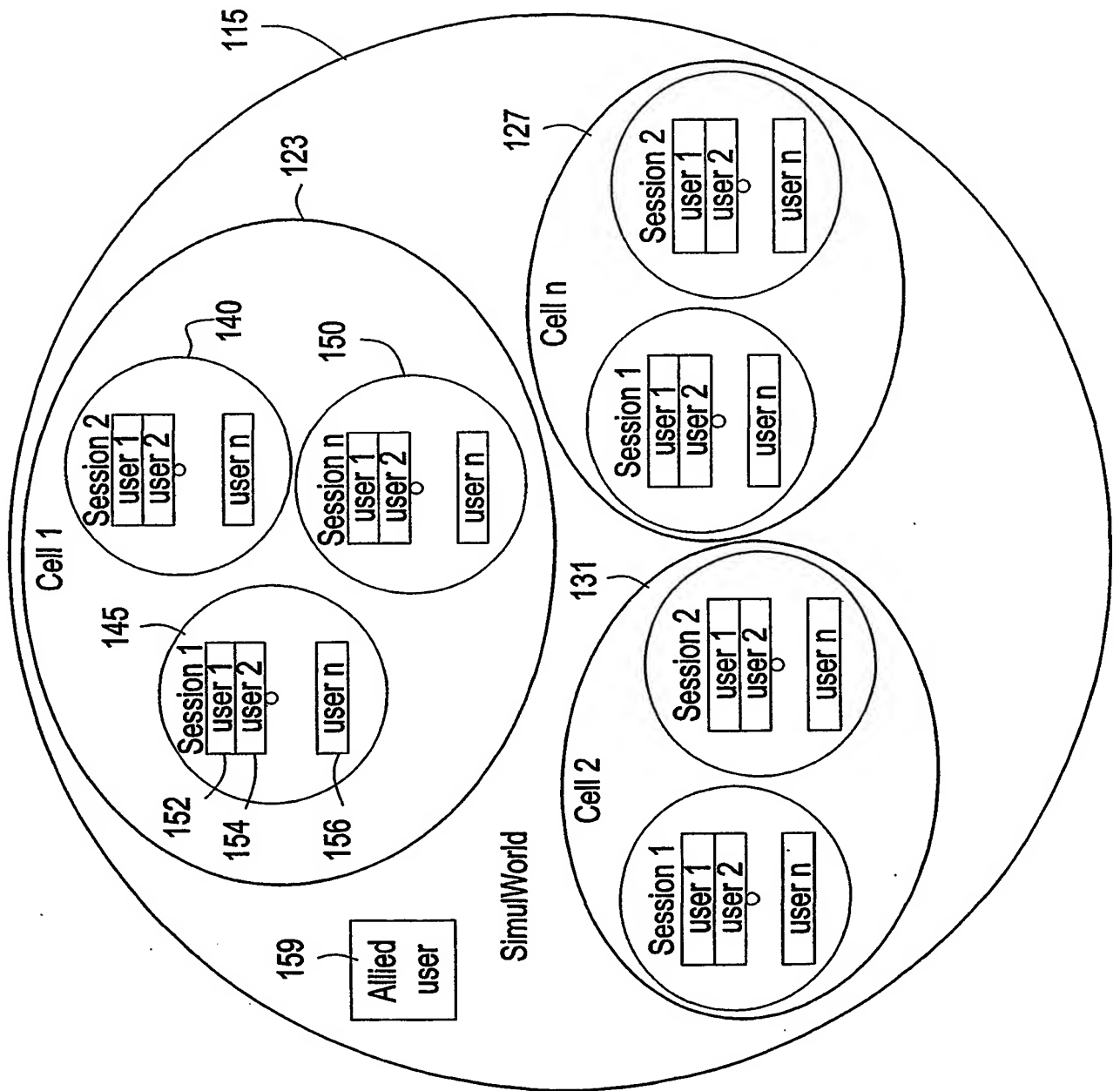1   28.   A main server according to claim 21, wherein the information sent to a first user

FIG. 1
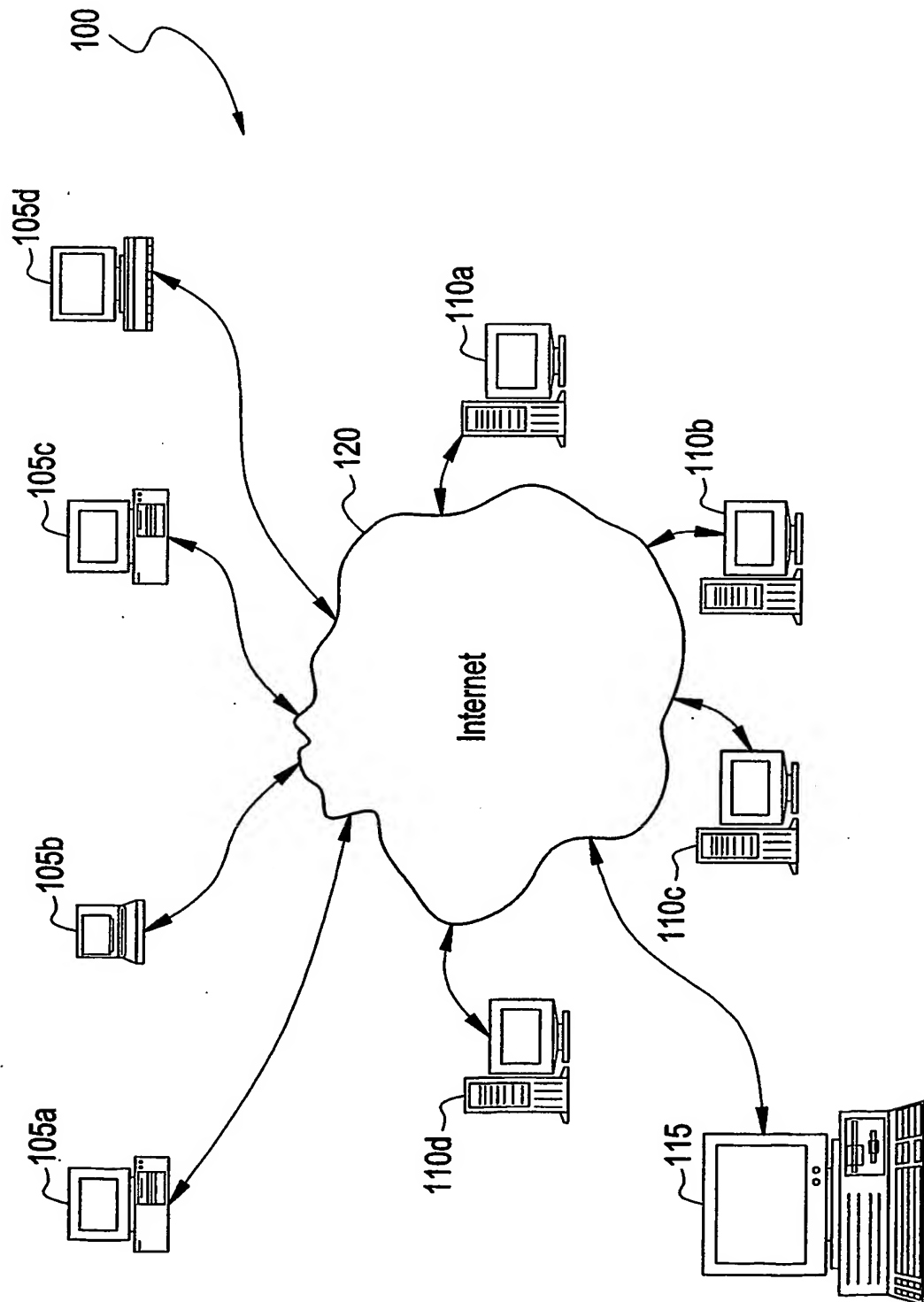
FIG. 3

INTERNATIONAL SEARCH REPORT

A.   CLASSIFICATION OF SUBJECT MATTER

IPC(7)   :G06F 13/00

US CL : 709/204

According to International Patent Classification (IPC) or to both national classification and IPC

B.   FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. :   709/204, 205, 227, 249

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WEST

C.   DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6,144,991 A (ENGLAND) 07 November 2000, abstract, col. 10, lines 35-52.	1-28
A	US 5,862,330 A (ANUPAM et al.), 19 January 1999, abstract and claims 40 and 45.	1-28
A	US 5,991,796 A (ANUPAM et al.) 23 November 1999, abstract, col. 2, lines 24-44, col. 4, lines 12-32, COL. 5, lines 42-53.	1-28
A	US 6.070,185 A (ANUPAM et al.) 30 May 2000, abstract, col. 1, lines 26-37, col. 2, lines 35-43, col. 3, line 62 to col. 4 line 8, col.4, lines 51-67.	1-28

[X] Further documents are listed in the continuation of Box C.   [ ] See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance		
"E"	earlier document published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed	"&"	document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
18 MARCH 2002	11 APR 2002

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